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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,528	03/17/2006	Roberto Defilippi	33033-1080	4639
45263	7590	08/08/2007		
MITCHELL P. BROOK C/O LUCE, FORWARD, HAMILTON & SCRIPPS LLP 11988 EL CAMINO REAL, SUITE 200 SAN DIEGO, CA 92130			EXAMINER RAHMAN, FAHAD	
			ART UNIT	PAPER NUMBER
			3709	
			MAIL DATE	DELIVERY MODE
			08/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/572,528

Applicant(s)

DEFILIPPI ET AL.

Examiner

FAHAD RAHMAN

Art Unit

3709

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 6-8 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must specify which previous claims it is referring to. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelch et al. (US 4,411,239) in view of Matzakos et al. (US 6,821,501).

6. The patent to Kelch et al. discloses a cooling system for the fuel used in a diesel engine. The system includes a closed fuel injection circuit 6 and a fuel cooling circuit 13. The fuel injection circuit receives fuel through a suction pipe from a fuel tank and provides a continuously circulating flow of fuel. The fuel cooling circuit flows fuel from and back into the fuel tank. A heat exchanger 10 is connected to both of the circuits and flows the fuel from the fuel injection circuit in indirect heat transfer relation with the fuel in the cooling circuit for removing heat from the fuel in the injection circuit. Kelch et al. do not disclose a pipe designed to be traversed by the fuel comprising a side wall having at least one internal projection obtained by plastic deformation. The patent to Matzakos et al. discloses a heat exchange system incorporating a tube 10 with a jagged cross-section (column 11, lines 61-63) to be used for carrying fuel. The purpose of the jagged cross-section is to increase surface area of the tube, thereby increasing heat transfer through the side wall of the tube. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the system of Kelch et al. with a pipe comprising a side wall featuring at least one internal projection in

view of the teaching of Matzakos et al. in order to help increase heat transfer through the side wall of the pipe.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelch et al. (US 4,411,239) in view of Schroeder et al. (US 3,625,257).

8. The patent to Kelch et al. discloses a cooling system for the fuel used in a diesel engine. The system includes a closed fuel injection circuit 6 and a fuel cooling circuit 13. The fuel injection circuit receives fuel through a suction pipe from a fuel tank and provides a continuously circulating flow of fuel. The fuel cooling circuit flows fuel from and back into the fuel tank. A heat exchanger 10 is connected to both of the circuits and flows the fuel from the fuel injection circuit in indirect heat transfer relation with the fuel in the cooling circuit for removing heat from the fuel in the injection circuit. Kelch et al. do not disclose a pipe obtained by plastic deformation. The patent to Schroeder et al. discloses a fluid flow tube 10 of plastically deformable material having an internal projection 18. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the pipe of the system of Kelch et al. with a plastically deformed pipe having an internal projection in view of the teaching of Schroeder et al. in order to achieve greater heat transfer.

9. Claims 2 and 4/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelch et al. (US 4,411,239) in view of Matzakos et al. (US 6,821,501) as applied to claim 1 above, and further in view of Lowther et al. (US 4,228,659).

10. Kelch et al., as modified by Matzakos et al., do not disclose a coiled pipe used in the system. The patent to Lowther et al. discloses a gas turbine 10 including a

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compressor 12 and a turbine 14 connected to the compressor 12 by a shaft 16 which includes an output shaft portion 17. The gas turbine 10 includes a closed conduit 18 in which a working gas is used over and over and continuously circulates from the compressor to the turbine and then back again to the compressor, preferably after first passing through a heat exchanger 32. The gas turbine 10 also includes an indirect combustor 20 containing a heat exchange portion 22 of the conduit 18, having a heat exchange configuration such as that of a coiled pipe. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the system of Kelch et al. as modified by Matzakos et al. with a coiled pipe in view of the teaching of Lowther et al. in order to help increase heat exchange.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelch et al. (US 4,411,239) in view of Schroeder et al. (US 3,625,257) and Lowther et al. (US 6,821,501) as applied to claim 2 above, and further in view of Tongu et al. (US 5,373,709).

12. Kelch et al. as modified by Matzakos et al. and Schroeder et al. do not disclose a coiled pipe comprising and alternating succession of elbows and rectilinear stretches. The patent to Tongu et al. discloses an absorption type refrigerator, comprising vapor refrigerant supplied from the vapor refrigerant outlet 5 which is partially condensed to provide liquid refrigerant which is supplied to the condenser 11. In the condenser 11, both the vapor refrigerant generated in the low-temperature generator 10 and the vapor refrigerant which has not been converted into the liquid refrigerant in the low-temperature generator 10 are cooled and liquified by the cooling water to provide liquid

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refrigerant which is supplied to the evaporator 12. In the evaporator 12, there is disposed a heat conductive pipe (water-cooling device) 12A inside which circulating water to be cooled flows. The liquid refrigerant supplied from the condenser 11 is dispersed onto the heat-conductive pipe 12A using the dripper 12B so that the circulating water is cooled utilizing evaporative heat generated when the liquid refrigerant is converted into the vapor refrigerant. In the absorber 13, the concentration solution introduced from the low-temperature generator 10 through the low-temperature heat-exchanger 15 is dispersed and dripped using dripper 13B so that the concentration solution absorbs the vapor refrigerant evaporated in the evaporator 12. The absorption in the absorber 13 functions to secure a high vacuum effect of the evaporator 12, so that the liquid refrigerant dispersed onto the heat-conductive pipe 12A of the evaporator 12 can be immediately evaporated. Further, in the absorber 13, there is provided a cooling means 13A for cooling the concentration solution and converting the concentration solution into the diluted solution. The cooling means 13a is made up of a coiled pipe and communicates with a cooling means 11A provided in the condenser 11. The cooling water is circulated inside the cooling means. The medium-concentration solution having a high temperature is heat-exchanged with the diluted solution having a low temperature in the high-temperature solution heat-exchanger 14 and the concentration solution having a high temperature is heat-exchanged with the diluted solution having a low-temperature in the low-temperature solution heat-exchanger 15 so that the solution heat exchanger is divided into two stages including upper and lower portions to improve heat-exchange efficiency. See Fig. 1. It would have been obvious

to a person of ordinary skill in the art at the time the invention was made to provide the system of Kelch et al. as modified by Schroeder et al. and Lowther et al. with the coiled pipe comprising an alternating succession of elbows and rectilinear stretches in view of the teaching of Tongu et al. in order to help increase the surface area of the pipe, thereby increasing heat exchange across the side wall of the pipe.

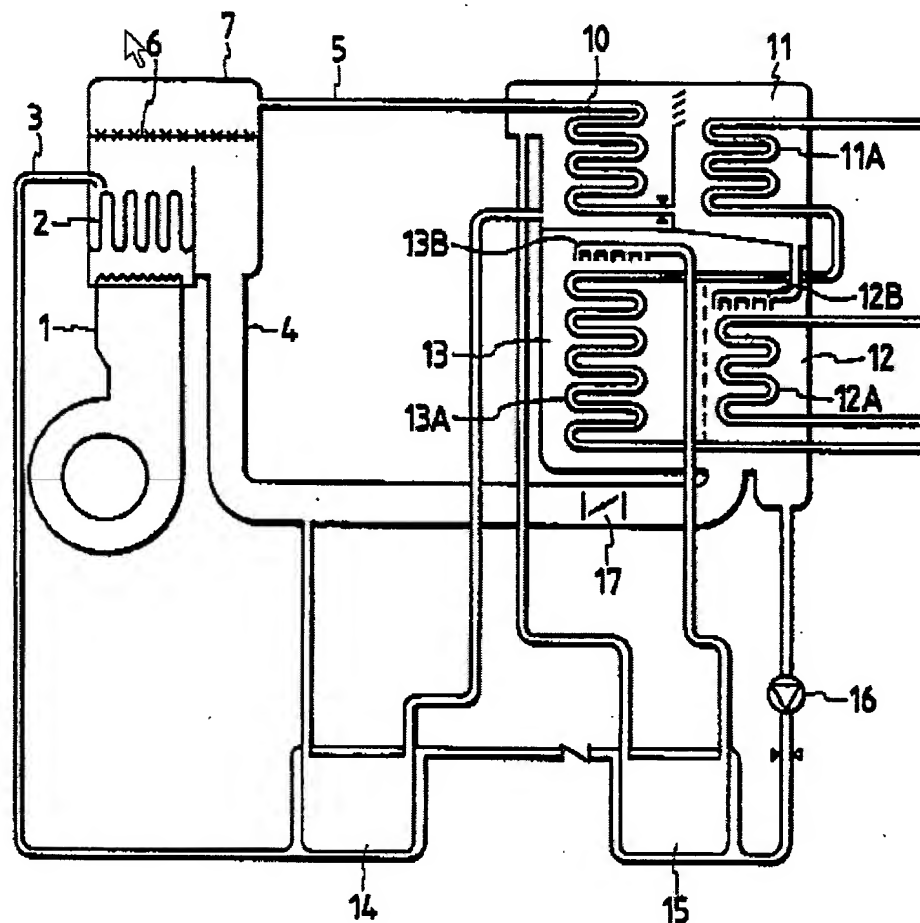


Fig. 1



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13. Claims 5/2 and 4/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelch et al. (US 4,411,239) in view of Matzakos et al. (US 6,821,501) as applied to claim 2 above, and further in view of Saxe et al. (US 5,309,544).

14. Kelch et al. as modified by Matzakos et al. do not disclose a pipe having a side wall having at least one internal projection, characterized in that said projection or projections extend longitudinally, and that these projections are made on rectilinear stretches. The patent to Saxe et al. discloses a light pipe having optimized cross-section, as shown in Fig. 2. The pipe features an internal projection extending longitudinally along a longitudinal stretch. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the system of Kelch et al. as modified by Matzakos et al. with a pipe featuring an internal projection extending longitudinally in view of the teaching of Saxe et al. in order to help increase the surface area of the side wall of the pipe, thereby increasing heat exchange.

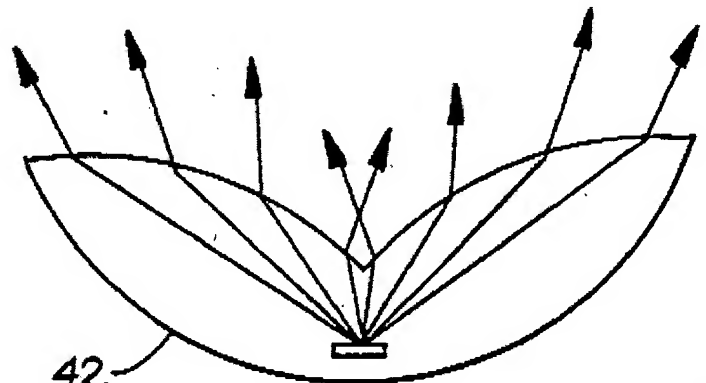


Fig. 2

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***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FAHAD RAHMAN whose telephone number is (571) 270-3511. The examiner can normally be reached on MONDAY THROUGH THURSDAY 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TERRENCE R. TILL can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Terrence R. Till  
Supervisory Patent Examiner

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